

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings of claims in the application:

1. (Currently Amended) A nano-structured synthetic implant, comprising a polymeric material displaying nano-sized surface features, and a surface roughness of about 50 nm or greater, wherein said surface features comprise a dimension having a size within the range of about 25 nm to less than 100 nm having sub-micron sized or nano-sized surface features.
2. (Currently Amended) The implant of claim 1 wherein the surface features are formed by chemical treatment of said polymeric material, and have one or more dimensions in the range from about 50 nm to less than about ~~[[1 μm]]100 nm.~~
3. (Currently Amended) The implant of claim 1 wherein the polymeric material is selected from the group consisting of polyglycolic acid, polylactic acid, poly(lactic acid-glycolic acid), poly(ether-urethane), polycaprolactone and poly(glycolide-caprolactone)the surface features are sub-micron surface features having at least one dimension in the range from about 100 nm to less than about 1 μm.
4. (Currently Amended) The implant of claim ~~[[1 ]]~~ 2 wherein the chemical treatment comprises contacting the polymer with a compound selected from the group consisting of HCl, H<sub>2</sub>SO<sub>4</sub>, HClO<sub>4</sub>, HNO<sub>3</sub>, H<sub>3</sub>PO<sub>4</sub>, HF, NaOH, K<sub>2</sub>CO<sub>3</sub> and NaHCO<sub>3</sub> surface features are nano-sized surface features having at least one dimension in the range from about 50 nm to about 100 nm.
5. (Original) The implant of claim 1 wherein the surface features are nano-sized surface features having at least one dimension in the range from about 25 nm to about 50 nm.
6. (Cancelled).
7. (Original) The implant of claim 1 wherein the polymer has a surface roughness of about 100 nm or greater.

8. (Original) The implant of claim 1 wherein the polymer has a surface area of greater than about  $30 \mu\text{m}^2$  per  $25 \mu\text{m}^2$ .
9. (Original) The implant of claim 1 wherein the polymeric material is a polymeric film.
10. (Original) The implant of claim 1 wherein the polymeric material is a biodegradable polymer.
11. (Original) The implant of claim 1 wherein the polymeric material comprises a compound selected from the group consisting of poly(lactic acid-glycolic acid), poly(ether-urethane), and polycaprolactone.
12. (Currently Amended) The implant of claim ~~[[1]]~~ 9 wherein the polymeric material comprises a polymeric film of poly(lactic-glycolic acid) and arginine-aspartic acid peptides.
13. (Currently Amended) The implant of claim ~~[[1]]~~ 11 further comprising an extracellular matrix component selected from the group consisting of collagen I, collagen III, collagen IV, collagen V, laminin, fibronectin, elastin, elastin-associated microfibrillar proteins, proteoglycans and arginine-aspartic acid peptides.
14. (Currently Amended) The implant of claim ~~13~~ 14 wherein the 1 further comprising an extracellular matrix component ~~is an extracellular matrix component~~ of bladder smooth muscle cells.
15. (Currently Amended) The implant of claim ~~13~~ 14 wherein the extracellular matrix component is incorporated into said implant ~~selected from the group consisting of~~ proteins, growth factors, and cytokines.
16. (Currently Amended) The implant of claim ~~13~~ 14 wherein the extracellular matrix component is coated on the surface of said implant ~~protein selected from the group consisting of collagens, laminin, fibronectin, elastin, elastin-associated microfibrillar proteins, proteoglycans, and arginine-glycine-aspartic acid peptides~~.

17. (Currently Amended) The implant of claim 14 wherein the ~~protein extracellular matrix component is coated on the surface and incorporated into said implant is~~ collagen IV.

18. (Currently Amended) The implant of claim 13 further comprising a population of cells, said population of cells seeded on the polymer surface.

19. (Original) The implant of claim 18 wherein the cells are selected from the group consisting of smooth muscles cells, fibroblasts, urothelial cells, neutrophils, monocytes, fibroblasts, and macrophages.

Claims 20-32 (Cancelled).

33. (New) The implant of claim 14 wherein the extracellular matrix component is selected from the group consisting of proteins, growth factors, and cytokines.

34. (New) The implant of claim 15 wherein the extracellular matrix component is selected from the group consisting of proteins, growth factors, and cytokines.

35. (New) The implant of claim 14 wherein the extracellular matrix component is selected from the group consisting of collagen I, collagen III, collagen IV, collagen V, laminin, fibronectin, elastin, elastin-associated microfibrillar proteins, proteoglycans and arginine-aspartic acid peptides.

36. (New) The implant of claim 14 wherein the extracellular matrix component is collagen IV.

37. (New) A nano-structured synthetic implant for repair of soft tissues, said implant consisting of

a polymeric material having a surface roughness of about 50 nm to less than 100 nm and said synthetic implant comprises a further surface feature having a dimension in the range from about 50 nm to less than 100 nm; and

a population of cells.

38. (New) A nano-structured synthetic implant comprising a polymeric material having nano-sized surface features comprising peaks and valleys, wherein a dimension selected from the group consisting of peak height, valley depth, peak width at half height and valley width at half depth, is within the range of about 25 nm to less than 100 nm.

39. (New) The nano-structured synthetic implant of claim 38 wherein the surface features are randomly distributed on the surface of said implant.

40. (New) The nano-structured synthetic implant of claim 38 wherein the surface features are uniformly distributed on the surface of said implant.

41. (New) The nano-structured synthetic implant of claim 38 wherein the wherein two or more dimensions selected from the group consisting of peak height, valley depth, peak width at half height and valley width at half depth, are each within the range of about 25 nm to less than 100 nm.

42. (New) The implant of claim 1 wherein the surface features are formed by a molding process and have one or more dimensions in the range from about 50 nm to less than about 100 nm.